XXII. *Sketches and Deſcriptions of three ſimple Inſtruments for drawing Architecture and Machinery in Perſpective. By Mr.* James Peacock; *communicated by* Robert Mylne, *Eſq. F.R.S.*

Read March 17, 1785.

SOME of the following machines muſt be placed upon the front edge of the table upon which they are to ſtand.

The ſights may be ſupported by a three-legged ſtaff.

The ſtocks of the ſquares or indexes may have ſteel ſprings upon their edges, in order to keep them in any aſſigned part of the grooves in which they are to ſlide.

FIG. I. (TAB. XIII.)

ABCD a drawing board, to be fixed on a table or ſtand, &c. in a vertical poſition. AB a ſliding-piece for the top of the T ſquare, having a rebate therein to form a groove, as expreſſed by the dotted line. CD, ſliding-piece for the bottom of the ſquare, having a rebate therein to form a groove for the reception of the ſtock as deſcribed by the dotted line; this ſliding-piece to be of ſufficient length to receive and ſupport the ſaid ſtock when the blade of the ſquare is coincident with the lines KNFH or LNGI. E a hole to receive the arm or ſlider of the ſight-piece, to be conſtructed in the uſual manner. FGHI an opening forming the field of view for the prototype. KLMN a ſheet of paper fixed on the upper part of the board for the copy, the four inner lines whereof form and incloſe a ſpace of the

the ſame dimenſions as the field of view reſpectively. OP a ſteel ſliding-piece, equal in length to the diſtance KF or IN; at the lower end P is a ſteel arm terminating in a point; and at the upper end, at O, is a ſimilar arm, terminating with a braſs button, in the center of which is a ſharp ſteel pricker; the ſaid pricker and the point P are to be equi-diſtant from the edge of the blade of the ſquare: this arm O is to have the faculty of a ſpring, in order that the pricker may clear itſelf of the ſurface of the paper as ſoon as the finger quits the button, in the ſame manner as is uſual in the apparatus of large protractors. This ſliding ſteel-piece may be drawn out of the dove-tailed or rebated groove at pleaſure, and the T ſquare will then be fit for ordinary uſes.

To uſe the Inſtrument.

Having fixed the board truly level and perpendicular, and placed the point of ſight, or hole for viſion, at ſuch a height and diſtance as ſhall be productive of the beſt effect, move the ſquare with one hand, and the ſteel ſlider with the other, until the point P coincides with the eye and any point or angle in the original object. Preſs the pricker at O, and the puncture will be the true place, or copy, of ſuch original point or angle, &c.

N. B. All perpendicular lines may be drawn at once (in pencil), by bringing the left-hand edge of the ſquare to coincide with the original line and the eye; and their lengths may be very nearly determined by the graduated edge of the ſquare, ſo as to prevent confuſion from unneceſſary lengths of lines. The ſaid graduated edge will alſo give the points in all curved or irregular objects.

FIG. II. (TAB. XIV.)

As the inſtrument, fig. 1. proceeds chiefly by finding the poſitions of Points, this is contrived to find the poſitions of Lines, and to determine their limits by their reciprocal interſections.

ABOCDE is a compound board, to be placed in a vertical poſition. FGHI is the opening, or field of view. KLMN is a looſe board, upon which paper is to be fixed; and the edges of the ſaid board are to be rebated, as deſcribed in the plan at *zz*. XYMN and OPQR are grooved receſſes, to receive the ſaid looſe board, as occaſion may require. STUW is a moveable parallelogram, compoſed of a rebated ſtock SU, two like graduated rulers ST and UW, and the regulating piece TW; the whole connected with ſcrews, ſo as to move freely with a ſmall force; and the diſtances between the centers of motion SU or TW to be equal to KF or HQ. AE and ED are rebated grooves, in which the ſtock of the parallelogram is to move.

To uſe the Inſtrument.

Having fixed the compound board ABOCDE truly vertical, ſlip the papered board KLMN into the receſs XYMN, or OPQR, as the ſubject to be drawn may render firſt neceſſary, and ſlide the ſtock SU of the parallelogram into the groove AE, or ED, to correſpond therewith; then, by moving the ſtock in the groove with one hand, and at the ſame time regulating the parallelogram with the other, the top edge of the ruler UW may be brought to coincide with any line in the original object, and the figured diviſions on the edge of the ruler will at the ſame time determine the limits thereof, near enough to avoid a confuſion of unneceſſary lengths of line, &c. The true repreſentation of the place and poſition of the line may be then drawn upon the paper, by the top edge of the ruler ST, a trifle longer at each extremity than it appears to be. This operation may be repeated for as many lines as can be obtained in the firſt poſition of the papered board and parallelogram; when they muſt be ſhifted into the other receſs and groove, to find the reſt, which may be now done without taking any further notice of the diviſions on the rulers.

N. B. A common T ſquare, applied to a board of this kind, will anſwer moſt purpoſes. For example: place the ſtock of ſuch a ſquare in one of the grooves, having a blade not leſs than the length HK or HR; mark the ſpaces HI and QR upon the upper edge thereof, and divide each of them into any convenient number of equal parts, and figure the ſaid parts in the uſual manner, to correſpond with each other, as may be ſeen in fig. 1. Now, ſuppoſe the ſtock of the ſquare to be in ED, it is plain, that all perpendicular lines may be drawn upon the paper KLMN in their proper places, and (by means of the diviſions on the edge of the ſquare) nearly of (though properly a trifle more than) their true length. All the lines of this deſcription being obtained, the ſhifting board muſt be placed in its other receſs, and the ſtock of the ſquare into the other groove; then, beginning with the firſt line, bring the edge of the ſquare to agree with its limits, and mark them off upon the line on the paper, and ſo of all the reſt in ſucceſſion; and join the points, where neceſſary, with a common ruler.

FIG. III. (TAB. XIV.)

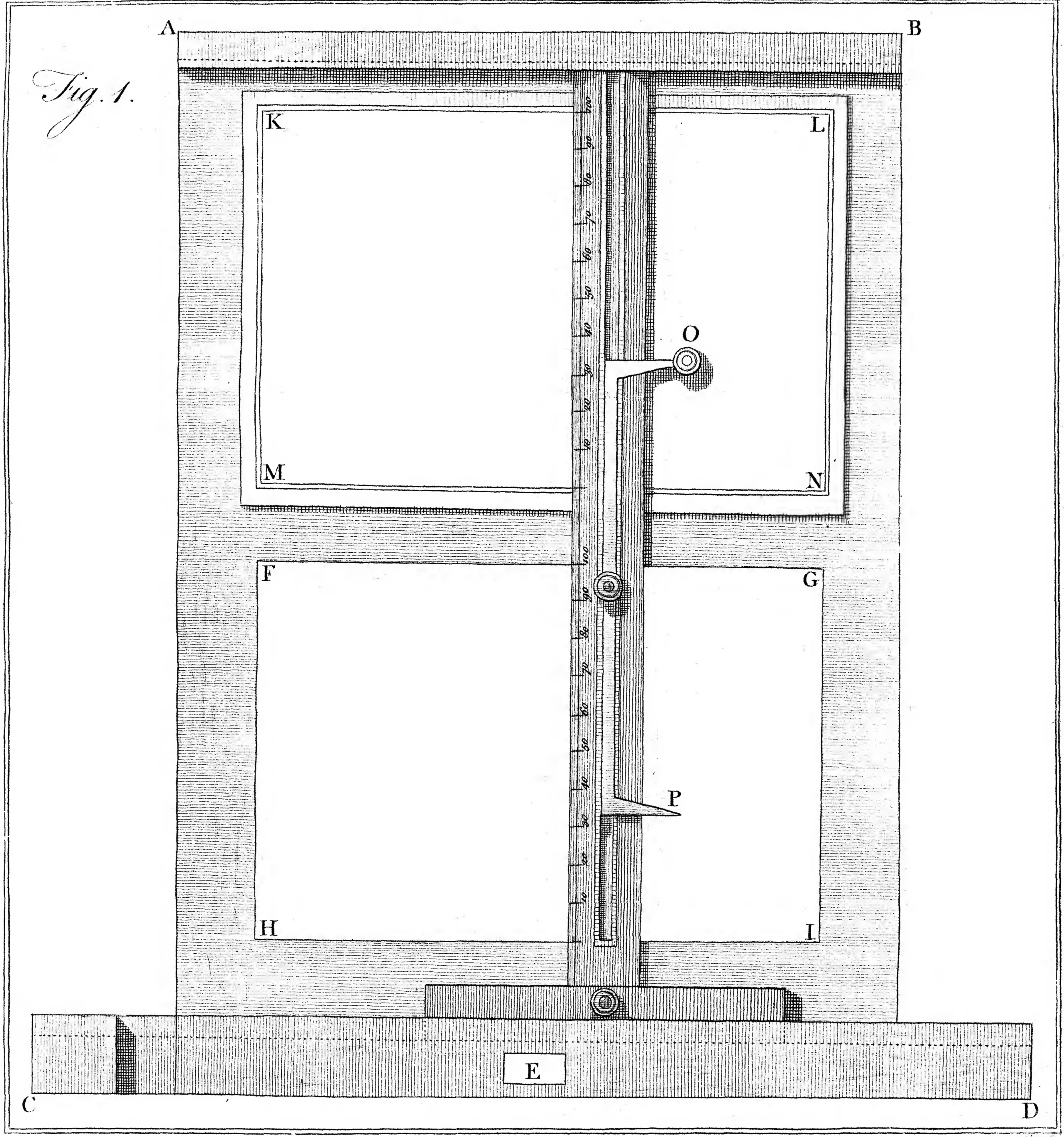
This apparatus is contrived to avoid the trouble of continually working againſt a board in a vertical poſition. In order to this, two ſquare boards are to be provided, equal in ſize, and of ſimilar conſtruction; one is to be fixed in a vertical poſition, for viewing the original object through a proper aperture; and the other is to be laid flat upon a deſk or table, for the greater eaſe and conveniency of drawing the copy upon paper to be fixed thereon for that purpoſe.

ABCD is the vertical board; EFGH the opening therein, forming the field of view; IKL the T ſquare, the blade thereof PL being moveable about the center P, with a moderate degree of ſtiffneſs; the ſtock K is to ſlide in a rebated or dove-tail groove AD, and be fixable to any part thereof by the ſcrew O; the ſteel points MN are to move with moderate eaſe in a rebated or dove-tail braſs groove in the middle of the blade of the ſquare; upon the back of the groove AD are to be fixed two braſs pins QQ, to reſt in proper holes, ſimilar to the holes marked RR; and the ſame kind of holes are to be made in the corner of the board whereon the copy is to be made.

To uſe the Machine.

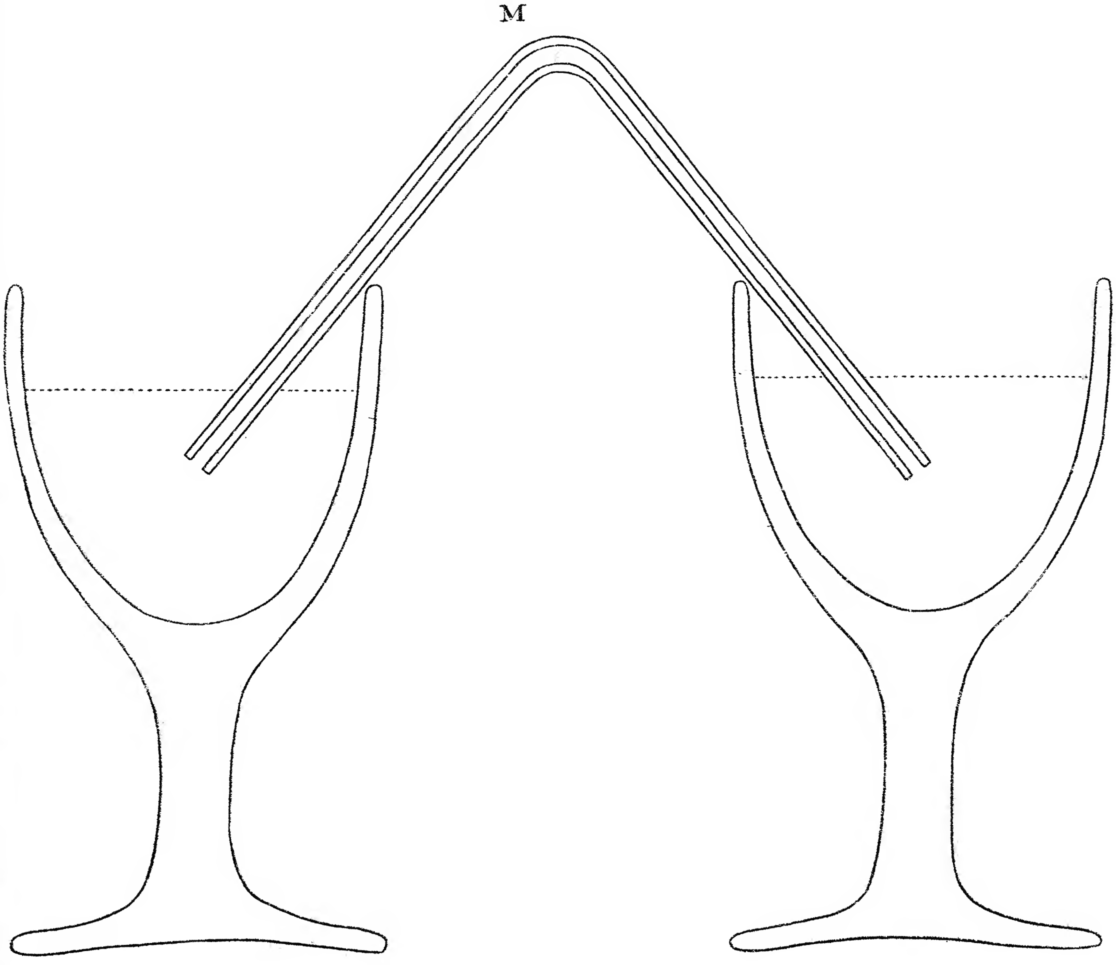
Having placed the board ABCD in a truly vertical poſition, fix the ſhifting groove AD in the rebate, on the moſt convenient ſide of the board, by means of entering the pins Q into the holes R; then looſen the ſcrew O, and move the ſtock IK, and at the ſame time turn the blade PL upon its center P, until one of its edges ſhall be coincident with ſome original line; then fix the ſtock by turning the ſcrew O; move the points M and N, till they exactly include the apparent length of the ſaid line; then take off the ſhifting groove AD, together with the T ſquare or bevil fixed thereto, and apply the ſame to the

Fig. 1.



Basire sc.

Fig. 1.



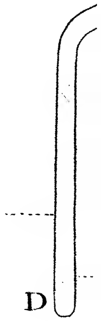


Fig. 2.

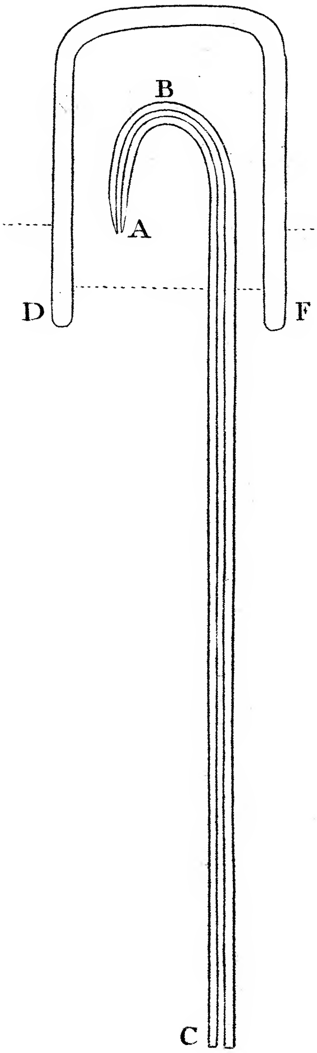
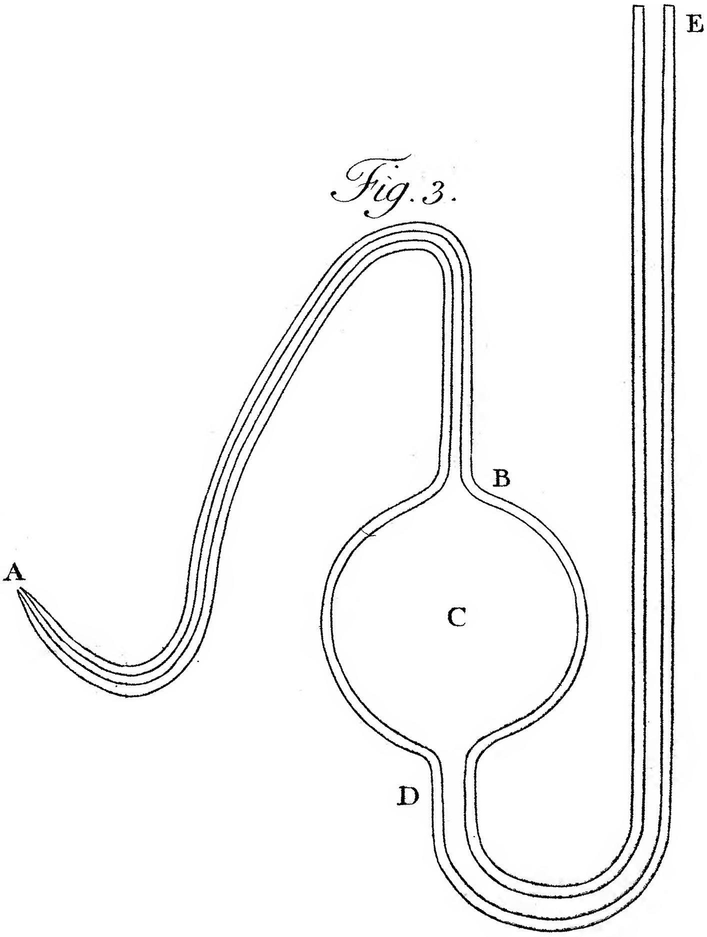


Fig. 3.



the correſponding ſide of the board on your deſk or table, an draw the line of its preciſe length and poſition.

N. B. If this is thought too operoſe, the braſs groove an ſliding pieces M, N, may be rejected, and the blade of th ſquare may be graduated on one or both of its edges at pleaſure and all lines in the ſame direction may be drawn thereby exactl as to their poſitions, and nearly, though ſomewhat exceeding their lengths *; and their preciſe lengths may be determined a the ſame time the lines in the contrary poſitions are drawn whoſe lengths will be given at the ſame time by the lines fir drawn.

---

* This will be effected, by noticing the numbers upon the blade, and takin thoſe next beyond the apparent limits of the line; and by this means the drawin will advance without the leaſt confuſion.

Fig 2

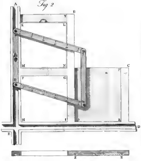


Fig 3